PROGRESS

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THERAPEUTICS.

UNDER THE CHARGE OF

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PEROXIDE OF HYDROGEN AS A REMEDY.

DR. W. B. RICHARDSON calls attention to this valuable remedy, in which he has interested himself for many years, in fact—since 1858. The peroxide of hydrogen is still made, as Thénard first made it, by the action of an aqueous acid solution on peroxide of barium. Water may be made to contain ten or twenty or even thirty volumes of the peroxide; the usual strength is what is known as a fifteen-volume solution. In order to keep the oxygen in the solution, it is necessary to have it slightly acidified, either by dilute nitric, hydrochloric, or phosphoric acid. In this form the solution can be administered internally in doses varying from a fluidrachm to a fluidounce; but two to four drachms diluted in ten fluidounces of water may be considered an average dose. The taste is peculiar, being identical with that of ozone when inhaled by the mouth, and not at all dissimilar to the taste of chlorine in a weak solution. When it is to be injected the solution should be rendered neutral by the cautious addition to it of caustic soda or potash. The soda is to be preferred; but it should not be neutralized until the time it is wanted. In the ten-volume solution it may be injected either into the cavities or into the cellular tissue without being further diluted. The solution of the peroxide is incompatible with many substances, but it is compatible with the following: the mineral acids, tannin, alcohol, glycerin, alcoholic solutions of the alkaloids, and alcohol combined either with ether, amyl hydrate, amyl nitrite, or iso-butyl.

The oxygen from the peroxide can also be administered by inhalation by means of a simple apparatus. Into a glass vessel having two necks, like the ordinary Wolff's bottle, a few ounces of the peroxide solution are placed; a tube from a funnel, the tube having a stopcock, runs through the stopper of the bottle to the bottom of the contained solution. From the second neck of the bottle there springs another tube for inhalation, at the free end of which is a double-valved mouthpiece, like the oldest and best of the chloroform inhalers. The apparatus is now ready for use. When it is wanted the funnel is charged with a solution of permanganate of potassium in the proportion of ten grains of the permanganate to a fluidounce of water. The tap is then turned, the permanganate solution flows into the peroxide solution, and immediately oxygen derived from both bodies is briskly evolved. This, if necessary, can be caught in a flexible balloon or bag, from which it can be inhaled in measured doses, but this is not requisite. Should the practitioner desire to combine the oxygen with ether, or with any other volatile body soluble in ether but not in water, he can allow the ether or ethereal solution to float on the top of the peroxide solution. Then, as the oxygen escapes, the ether, or the ether with its other volatile comrade, passes over in combination with its oxygen. A patient can help himself to a dose at any time, as may be directed, by merely adding a measured quantity of the permanganate solution. Nitrite of amyl can be inhaled in this manner with ether, and, in short, there is here a means of administering most of the active volatile medicaments by inhalation, and in a form most ready for combination with the blood as it passes in its course over the pulmonic circuit. For a styptic and deodorant spray for the throat the following form is useful: alcohol (sp. gr. 0.830) half an ounce, tannin twenty grains. Dissolve the tannin in the alcohol with an ounce of distilled water and then add the ten-volume peroxide of hydrogen solution to six fluidounces.

The peroxide solution can be used as a gargle, antiseptic, and astringent. A good form for the purpose is: tannin ten grains, glycerin one ounce, distilled water four ounces, diluted hydrochloric acid ten minims, solution of peroxide of hydrogen sufficient for eight fluidounces—to make an eight-ounce gargle. Another simple yet useful preparation of the peroxide is as an unguent, for inunction over the surface of the skin after scarlet fever and other affections where there is free shedding of dead cuticle. The ointment is made by rubbing up ozonic ether with spermaceti ointment so as to form a thin paste, which may, if desired, be rendered thick by the addition of a little more spermaceti, or thin by the addition of olive oil.

Applied to the throat in diphtheritic patients, the solution of peroxide, either alone or in combination with glycerin, causes, without any doubt, a rapid separation of the false membrane, and produces a favorable condition of the local surface. But here the benefit ends; on the general or constitutional conditions it has not as yet been efficient. The twenty-volume solution can be applied freely to the fauces, with borax or with glycerin, and to adults it can be administered in the form of spray. In a case of chronic dysentery with frequent motions of a fluid and offensive character, Dr. Richardson prescribed the ten-volume solution with tannin, in one-ounce doses, diluted with a pint of tepid water. The injection was thrown into the bowel once daily, through a long O'Beirne tube, and as the oxygen was liberated freely in the intestine soon after the injection was thrown in, the evidence was supplied of the excretion of purulent fluid, or of some excreted matter from the blood. The result was very satisfactory and led to a rapid and sound recovery.

Peroxide of hydrogen may be used as an inunction for the surface of the body of patients affected with cutaneous exfoliation, as in scarlet fever and measles. In these instances the ozonic ether is used instead of the aqueous solution, because of the facility with which it mixes with the oil or lard required to make an ointment. The body is rubbed from head to foot with the ointment, the spaces between the fingers, toes, and flexures of the joints being included. The application is very agreeable to the patient, and the effect in removing obnoxious odor is most marked. But the grand advantage lies in the circumstance that the process seems to remove all danger of infection from the convalescent after three or four applications.

In diagnosis peroxide of hydrogen may be of great service. It diagnoses pus from mucus. In cases where it is necessary to distinguish between purulent expectoration and that which is not so, the sputa are placed in a test-tube containing a solution of peroxide. If the matter produces liberation of oxygen, the evidence of pus is strong; and if the same event occurs after all carbonic acid is removed, the presence of either pus or of some plastic element of blood or cellular-tissue element may be affirmed of a certainty.

Injected into a closed mucous cavity like the bladder, the surface being in a healthy state, and the viscus having been emptied of urine and washed out with warm distilled water, there is no liberation of oxygen from a neutral solution of peroxide. But if there be any ulceration, by which a surface of cellular tissue is laid bare, or if there be pus present, then the escape of oxygen will be so free from two or three ounces of a ten-volume solution injected into the bladder, that the gas may be detected as it escapes from the free end of the catheter by its effect in re-lighting a partly extinguished taper. In physiological research no danger was found in injecting a neutral solution of peroxide into the cellular tissue. This practice might possibly be adopted on the human subject.

In asphyxia, as after drowning and after suspended animation from chloroform and other narcotics, a hundred pints of oxygen might easily be transfused, hypodermically, by using the thirty-volume solution; and, with the temperature of the solution raised to blood-heat, the diffusion of the gas through the cellular tissue would oxidize the blood rapidly, and tend to give new force to the circulation.

In regard to peroxide of hydrogen, it is well to recall the important fact that the remedy we have had before us has about it the peculiarity that it is a purely natural remedy, that it is not toxic, and that with the exception of the danger of producing by it gaseous accumulation in the blood, under some conditions of its use—a danger which admits of being avoided—it is free of all risk. In its remedial application, too, there is no complexity as to its action. In every instance that which it effects is oxidation: for asphyxia it is oxidation, for breaking up pus and exudations it is oxidation, for destroying infectious and fœtid organic secretions or excretions it is oxidation. —*Lancet*, No. 14, 1891.

PEROXIDE OF HYDROGEN IN ABDOMINAL SURGERY.

DR. CHARLES P. NOBLE is enthusiastic about the remarkable qualities of peroxide of hydrogen. Its importance as a pus-destroying agent is becoming more and more recognized. In general, in order that antiseptic or germicidal